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Stephane Broquere

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VMWARE, INC.

DARRYL SMITH

3401 Hillview Ave.

PALO ALTO, CA 94304

EXAMINER

BRYANT, DOUGLAS J.

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,885	Applicant(s) BROQUERE ET AL.	
	Examiner DOUGLAS BRYANT	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/8/2009;4/8/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-13 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-5 and 7-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Rietschote et al. (Rietschote) US Patent US 7,203,944 B1.

2. With respects to claim 1, Rietschote teaches a method for managing applications, making use of at least two physical machines linked by communication means, the method comprising; connecting of the at least two physical machines to form a physical machine network (**Col 2, lines 61-67; a cluster includes computer systems, and a network**), wherein each of the physical machines comprise a physical structure on which is loaded a first software layer adaptable to the corresponding physical machine (**Col 7 lines 28-36[Each computer systems includes a VM image**

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{1st software layer virtual I/O device in the underlying hardware}} as well as a second layer forming a virtual layer on which virtual machines will operate, the virtual layer comprising at least one application, the physical machine network includes a virtual layer for each physical machine **(See figure 1; Col 3, lines 1-19; the virtual machine kernel {second layer wherein virtual machine kernel operates which manages all of the applications ran on the VM itself})**; loading a control program to the virtual layer of each physical machine **(Col 8, lines 1-21 {VM migration code is a control program activated when a system load exceeds a desired amount})**; establishing a dialogue between the control program and a system management process **(Col 8, lines 22-39 {performance monitoring/management software calculating the load of the computer system})**; defining a service containing a plurality of applications, the service defined by the system management process **(Col 7-8, lines 62-21{VM migration code on all of the computer system exchange load information to attempt load balancing is a service})**; communicating between the system management process and each virtual layer in order to determine the status of the virtual machines associated to with said virtual layer **(Col 6, lines 64-65 {the VM Kernel communicates with each other to exchange load information})**; **Col 8, lines 40-54 {the migration code selects another computer system in the cluster to attempt load balancing}**; assigning a virtual machine to the corresponding virtual layer taking into account one or more characteristics of the application associated with the corresponding virtual layer, wherein the virtual machine is independent of the

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corresponding physical machine (**Col 3, lines 20-55; {characteristics is considered to be the type of computer resources used by the application during execution}**)).

3. With respects to claim 2, the method according to claim 1 has been discussed above. Rietschote teaches wherein loading the control program includes determining the status of each physical machine on which a virtual layer is placed communicating the status of each physical machine to the system management process by communication means (**Col 7-8, lines 62-21 {the VM migration code on a computer system selects another computer system to exchange load information with. This information includes its status}**)).

4. With respects to claim 3, the method according to claim 1 has been discussed above. Rietschote teaches wherein loading the control program further includes determining the status of each virtual machine associated with the virtual layer of the corresponding physical machine and communicating the status of each virtual machine to the system management process by communication means (**(Col 8, lines 22-39{the VM migration code with the performance monitoring/management software on the requesting computer system}**)).

5. With respects to claim 4, the method according to claim 1 has been discussed above. Rietschote teaches wherein the system management process further includes: determining one or more characteristics of the virtual machines and of the one or more

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resources necessary for operating the virtual machines (**Col 4-5 line 66-21**

{characteristics is considered to be the amount of computer resources consumed by the VM during execution and the resources are the types such as storage and I/O activity}}); performing surveillance of the status of each virtual machine using the control program (**Col 7-8, lines 62-21 {the VM migration code on a computer system selects another computer system to exchange load information with. This information includes its status}}**); associating the status of to each virtual machine forming the service (**Col 7-8, lines 62-21 the VM migration code exchange information from the requesting computer system selecting another computer system}}**); and transmitting the status of each virtual machine associated with the service to an operator (**Col 8, lines 22-54; {the load may be set manually by an administrator to migrate away from requesting computer system}}**).

6. With respects to claim 5, the method according to claim 1 has been discussed above. Rietschotes teaches wherein the system management process further includes; when the virtual machine is to be relocated from a first physical machine to a second physical machine (**Col 4, lines 56-65 {VM is said to migrate....a first computer system to a second computer system}}**), transmitting a stop instruction to the control program available at the first physical machine (**Col 7, lines 4-22 {a command is sent to suspend or interrupt the VM}}**); identifying data pertaining to the stopped virtual machine located on the first physical machine (**Col 6, lines 5-20 {an identifier locating the VM image that was suspended}}**) transferring the identified data to the second

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physical machine **(Col 6, lines 5-20 { any transferring mechanism may be used to migrate the source from one computer system to the targeted computer system; assigning virtual machine to the second physical machine (Col 5, lines 5-21 {migrating one or more VMs from one computer system to another to lower the loaded of a computer system}); and reactivating the virtual machine (Col 7, lines 23-27 {may resume the VM in the computer system}).**

7. With respects to claim 7, the method according to claim 5 has been discussed above. Rietschote teaches wherein the system management process further includes: defining one or more operating constraints for one or more virtual machines associated with a service, wherein the assigning of a virtual machine to a virtual layer of a physical machine and the relocation of said virtual machine another virtual layer associated with the second physical machine takes into account the one or more operating constraints **(Col 4-5, lines 67-5 {characteristics is considered to be the amount of computer resources consumed by the VM during execution and the resources are the types such as storage and I/O activity; Col 5, lines 5-21; more efficient execution may be achievable by migrating one or more virtual machines})**

8. With respects to claim 8, Rietschotes teaches a method for managing applications, comprising: establishing a communication link between at least two physical machines to define a physical machine network, the physical machines having a system management process to manage physical resources available at the

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corresponding physical machines (**Col 2, lines 61-67 {a cluster of computer systems and a network}**); **Col 3, lines 1-19 {the VM virtual machine kernel manages the physical resources available}**); defining a virtual layer for each physical machine, the virtual layer providing an interface to the physical machines to access the physical resources of the physical machines, each virtual layer having a control program to communicate with the system management process (**See fig. 1; Col 3, lines 1-7{each computer system includes a virtual machine kernel}**); **Col 8, line 22-39 {VM migration code communicates with the VM Kernel}**); defining services for specific ones of the virtual layer associated with the physical machine of the physical machine network, the service including at least one application (**Col 4, lines 20-47{ comprises virtual servers.....one or more applications for use by the a user...it is understood that virtual layers lie on a specific physical machine that can handle the requirements of the application}**); monitoring inventory of the physical machines and the virtual machines, the inventory identifying resources available at the physical machines and resources required at the virtual machines of the physical machine network (**Col 8, lines 22-39{ performance monitoring software exchange load information of each computer system}**).

9. With respects to claim 9, the method of claim 8 is discussed above. Rietschotes teaches a method wherein the system management process further includes, anticipating resource requirements of the application associated with the service (**Col 3, lines 56-65 {the application and O/S may execute on the Computer system and**

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comprise one or more data structures storing the processor state); and developing resources at the physical machine network to address the resource requirements of the application such that the physical machine network is able to handle the resource requirement load of the service **(Col 6, lines 21-37 { Once the virtual machine has migrated from source computer system to targeted computer system.....the VM using I/O devices of the target computer system})**).

10. With respects to claims 10, the method of claim 8 is discussed above.

Rietschotes does teach a method that further includes replacing a physical machine in the physical machine network, the replacement includes, suspending operation of the virtual machine executing at the virtual layer associated with the physical machine identified for replacement **(Col 7, lines 4-22 { a command to send a suspend or interrupt to the VM})**; identifying data associated with the virtual machine at the physical machine, the data directly associated with the application executing at the virtual machine **(Col 6, lines 5-20 {an identifier locating the VM image of the VM that was suspended})**; transferring the identified data to a different physical machine **(Col 6, lines 5-20 {any transferring mechanism to transfer from one computer system to the targeted computer system** associating the virtual machine corresponding to the transferred data to the different physical machine **(Col 5, lines 5-21 {migrating one or more VMs from one computer system to another to lower the load of the computer system})**; and activating the virtual machine so as to execute the application at the virtual layer associated with the different physical machine using the data and

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resources at the different physical machine (**Col 7, lines 23-27 {may activate the VM in the computer system}**)).

11. With respects to claim 11, Rietschotes teaches a method for managing applications, comprising: defining a physical machine network by communicatively connecting at least two physical machines, the physical machines having a system management process to manage physical resources available at the corresponding physical machines (**Col 2, lines 61-67 {a cluster of computer systems and a network}; Col 3, lines 1-19 {the VM virtual machine kernel manages the physical resources available}**); providing a virtual layer on each physical machine, the virtual layer including at least an application that is executed using at least one of a plurality of virtual machines (**See fig. 1; Col 3, lines 20-43 { one application is shown in the virtual machine. The virtual machine may include many applications}**); associating a control program to the virtual layer on each of the physical machines, the control program managing the operation of the plurality of virtual machines (**Col 3, lines 1-7 {each computer system includes a virtual machine kernel}**); coupling the system management process to each virtual layer in the physical machine network, the coupling enabling dialogue between the system management process and the corresponding control program of each virtual layer (**Col 8, lines 21-39 {VM kernel communicates with the VM migration code whenever a load balance has to be completed}**), wherein the dialogue includes determining status of the physical machines and the plurality of virtual machines within the physical machine network, establishing resource

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availability at the physical machines and resource requirements of the plurality of virtual machines **(Col 6, lines 64-65{ exchange load information}; Col 8, lines 40-54 {the migration code selects another computer system in the cluster of computer systems to attempt load balancing}**; and associating selected ones of the plurality of virtual machines to the virtual layer of particular physical machines within the physical machine network based on the characteristic requirements of the application available at the virtual layer of the particular physical machines **(Col 3, lines 20-43;{characteristics is considered to be the type of computer resources used by the application during execution})**, wherein each of the plurality of virtual machines is independent of the corresponding physical machines **(Col 3, lines 46-58 {when the VM is active.....which are mapped to the virtual storage devices in the VM})**.

12. With respects to claim 12, the method of claim 11 is discussed above.

Rietschotes teaches a method that further includes, defining a service containing a plurality of applications **(Col 4, lines 20-43 {the VM kernel comprises virtual servers, VM scheduler and migration code. This services has a plurality of applications})**; and supervising operation of the service by one of supervising each of the applications or supervising each of the virtual machines that execute each of the applications **(Col 8, lines 22-39 {performance monitor/management software exchange load information with each computer system})**.

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13. With respects to claims 13, the method of claim 11 is discussed above.

Rietschotes does teach a method that further includes relocating a virtual machine from a first physical machine to a second physical machine within the physical machine network, the relocation includes, suspending operation of the selected ones of the plurality of virtual machines associated with the first physical machine **(Col 7, lines 4-22 {a command is sent to suspend/interrupt the VM})**; dissociating the control program at the virtual layer of the first physical machine from the corresponding selected ones of the plurality of virtual machines **(it is understood that when the VM is migrated from a first physical machine to a second physical machine that the control program is dissociated with the first physical machine because the VM is no longer affiliated with that first physical machine)**; identifying data associated with the application executed on the selected ones of the plurality of virtual machines at the first physical machine **(Col 6, lines 5-17 {an identifier locating the VM image of the VM that was suspended})**; transferring the data associated with the selected ones of the plurality of the virtual machines from the first physical machine to the second physical machine; providing a virtual layer at the second physical machine, the virtual layer including an application to be executed by the selected ones of the plurality of the virtual machines **(Col 6, lines 5-20 {any transferring mechanism may be used to migrate the source from one computer system to the targeted computer system})**; assigning the selected ones of the plurality of the virtual machines to the virtual layer at the second physical machine, the assigning includes associating a control program to the virtual layer at the second physical machine so as to manage the operation of the selected

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ones of the plurality of the virtual machines by establishing dialogue between the system management process and the control program (**Col 5, lines 16-21 {migrating one or more VMs from one computer system to another system to a lower the load of the computer system. The performance monitor/management software is already loaded on the new machine, since it had to exchange load information in order to determine if the VM could be migrated to that computer system}}**); and activating the selected ones of the plurality of the virtual machines so that the selected ones of the plurality of the virtual machines can execute the application at the virtual layer using the resources and data available at the second physical machine (**Col 7, lines 23-27 {may activate the VM in the computer system}}**).

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rietschote (Rietschote) US Patent 7,203,944 B1 in view of Adamovits (Adamovits) US Patent 6,698,017 B1.

16. With respects to claim 6, the method of claim 5 is discussed above; Rietschote does not teach wherein upon successful reactivation of the virtual machine, the system

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management process further includes, transmitting an instruction to the control program of the first physical machine to suppress the data pertaining to the this virtual machine.

17. However, Adamovits does teach wherein upon successful reactivation of the virtual machine, the system management process further includes, transmitting an instruction to the control program of the first physical machine to suppress the data pertaining to the this virtual machine **(Col 10, lines 38-67 {as the replacement VM is initialized and run on the active processing element.....the original system are reduced or "throttled-down"})**.

18. It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporated the teachings of adamovits into the method of Rietschote to suppress the data pertaining to the virtual machine that was just migrated over to another computer system. This modification would have been obvious because of of ordinary skill of the art would have created a process to suppress the data of the Virtual machine that was migrated so that the resources of the previous computer system can now be used to help the balance the load of another computer system making the cluster of system more optimal and efficient.

Response to Arguments

19. Applicant's arguments with respect to claim1-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS BRYANT whose telephone number is (571)270-7707. The examiner can normally be reached on M-F 8:00-5:00pm Est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on 571-272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOUGLAS BRYANT/
Examiner, Art Unit 2195

/Lewis A. Bullock, Jr./
Supervisory Patent Examiner, Art Unit 2193